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Bridging the Gap: A Program to Enhance Medical Students' Learning Experience in the Foundation Year

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Objective: To evaluate students' perceptions of the intervention program based on small group teaching, regular continuous assessment, science-based tailored study skills program and recorded attendance on students' enhanced learning experience in the first year of study in an outcome-based medical course.

Design: Descriptive study.

Setting: RCSI Bahrain.

Method: A Twenty-seven-item questionnaire was administered to foundation year students at the Royal College of Surgeons in Ireland – Medical University of Bahrain (RCSI Bahrain) after the completion of the first semester to explore whether these interventions enriched the students' learning experience or not. Comparisons of pass rates in all modules over the four years were also included. Students' perceptions of the academic study skills course were collected through a questionnaire activity (version 2007120102) via the Virtual Learning Environment (VLE).

Result: The results suggest that local adaptations of undergraduate programs may lead to pedagogical expertise that contribute to enhanced learning experience of students and better integration of pre-university and third-level courses. The majority of questionnaire items were rated positively and the comparison of pass rates showed the highest results in the year the intervention was implemented.

Conclusion: Making local adaptations to medical programs without changing the core curriculum can mark good academic practice. Considering specific socio-cultural frameworks of students may lead to improvements in the delivery of programs in universities.

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University performance of undergraduate students has long been the subject of educational research, specifically in medicine; high attrition rates in this field might have social and economic consequences[1]. Therefore, university educational programs should be reviewed in order to avoid these consequences. This may require making adaptations in terms of student recruitment, curriculum development, teaching and learning, assessment and policy modification[2].

RCSI Bahrain is a constituent branch of the Royal College of Surgeons in Ireland in Dublin (RCSI) which adopted the same medical program, which is followed in Ireland with its values and structures. It is not surprising then that this undergraduate program, which is based on an outcomes-based model, may pose obstacles to learning when 'transplanted' to a different culture. Literature suggests that students who begin university in the context of culture change often experience difficulties with learning because of differences in academic study skills, delayed adjustment to university learning environment, low rate of attendance and lack of academic engagement[3].

Therefore, to create great opportunities and to enhance the learning experience of first year students at RCSI Bahrain, the foundation year committee implemented a number of changes without modifying the core curriculum itself. The changes undertaken were as follows:

1. Introduction of an intensive one week study skills program.
2. Integration of this study skills program with a gradual introduction of core science modules during semester one.
3. Recorded attendance at all teaching events.
4. Increased small group teaching.
5. Increased regular continuous assessment.

There is significant evidence indicating that effective academic study skills are one of the top direct contributing factors to student academic performance and retention in higher education[4]. The study skills program, delivered in the first week of semester one in RCSI Bahrain was designed to focus on improving the study skills of the students, the majority of whom were entering the university directly from secondary school. The foundation year committee also believed that the gradual introduction of the core science modules into the study skills course allowed the students time to adjust to the new university learning environment. In this way, the students could practice improving their academic study skills before being fully exposed to the science content. This involved practicing pre and post-lecture preparation techniques using selected examples of lectures that were part of the series of modules introduced at the normal pace later in the foundation year. Integration of sciences and study skills was believed to be an innovative intervention as it differed from regular study courses often described in the literature.

Student engagement through attendance and tutorial participation is also cited in literature as a strong determining factor affecting students' performance and retention in higher education[3]. The introduction of an increased number of small group teaching events on a weekly basis was designed to provide students with greater opportunity to actively engage with the learning material. Additionally, continuous assessments were administered on a weekly basis during tutorials to encourage attendance and greater engagement in these learning events.

It was also assumed that improving the study skills program by integrating it with science modules would help students overcome the initial difficulties with learning and create greater opportunities to improve performance.

The aim of this study is to investigate the impact of the innovative program on students' learning experience and to discuss its benefits for students.

METHOD

Ninety-three students in the foundation year (n=93) were recruited for the study. The group included students who completed their first semester of study and who participated in the new study skills and tutorial based program. Approximately 50% of students were Bahraini learners who had previously studied in mainstream schools within the country. The remaining students were from other GCC countries, Canada, Australia and the USA. All students were 18 years old.

A twenty-seven descriptive questionnaire was administered after publication of the results at the end of semester one summative examinations. The questionnaire contained six sections which asked students to respond to statements on the 5 point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree). The questionnaire was designed to collect information about the students' perception of the academic study skills course, the impact this course had on their study skills, the recording of attendance at teaching events, regular small group tutorials, weekly continuous assessments and the impact of these initiatives on their study behaviors.

The development of the questionnaire was guided by several efforts, including a review of the recent literature on measuring the effectiveness of university intervention courses, insights gained from similar existing questionnaires and expert judgment of lecturers who participated in the development and administration of the course[4-9]. The questionnaire was tested for reliability (Cronbach α=0.91). Mean values and standard deviation were calculated for each item using SPSS version 20.

The questionnaire was made available to all students online through the questionnaire activity (version 2007120102) on the VLE for a limited period of time, after which 56 (60%) students had completed the questionnaire[10]. The results of the questionnaire were exported directly from the VLE for univariate analysis based on mean values.

Additionally, numerical data about students' performance and pass rates from the past four years in the foundation year at RCSI Bahrain were collated. This was used for comparison and contrast with the program which included the new interventions.

RESULT

The results from the four science modules based on pass rates for the past four years are shown in figure 1. In the fourth year, the pass rates for all four modules were above average and the highest for the four years in all four modules.

The evaluation questionnaire was completed by 56 (60%) students in the FY class. The questionnaire statements and average response for each are shown in figure 2.

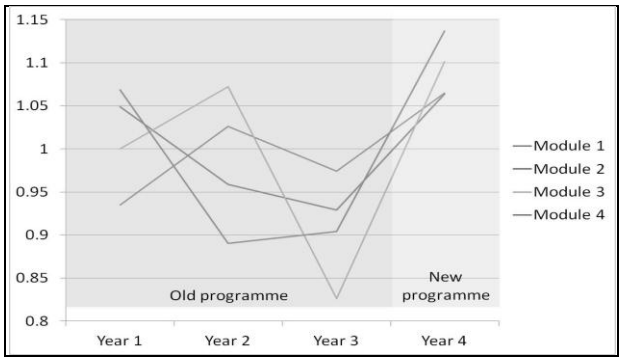

Figure 1: Results of Pass Rates for the Past Four Years in Four Core Modules in Foundation Year

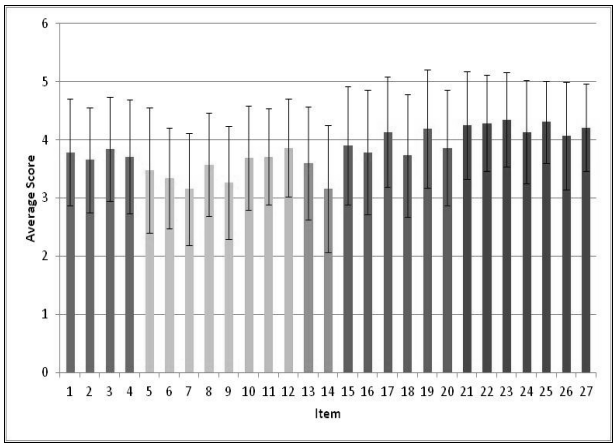

Figure 2: Average Mean Student Responses to the Items of the Questionnaire with Standard Deviation Bars

The questionnaire items were set on the X axis and the Likert scale on the Y axis. The graph represents the mean responses with standard deviation. The description of each item is presented below along with each mean response.

Four statements regarding pre-lecture preparation during the study skills course were presented. The average score ranged between 3.7 and 3.8 (out of 5) on the Likert scale indicating the students' positive attitude towards the pre-lecture preparation. The respondents agreed that the course helped them organize their learning (3.8, item 1), helped them identify new words and phrases (3.7, item 2), helped them identify the learning objectives of the lecture (3.8, item 3) and helped them manage their time more effectively (3.7, item 4).

Regarding students' activity during the lectures, the agreement ranged from 3.2 to 3.6 on the Likert scale. The study skill program taught them how to organize information in lists and bullet points (3.6, item 8), how to use abbreviations (3.5, item 5), to take better notes and organize information in a hierarchical manner (3.3, item 9) and how to draw mind-maps (3.2, item 7).

The score of post-lecture activity ranged from 3.7 to 3.9. The study skills course helped them to better revise the lectures emphasizing the learning objectives (3.9, item12), helped them remove unnecessary information (3.7, item 11) and helped them organize the important information in a more condensed manner (3.7, item 10).

On the psychological/sociological impact of the study skill course, the respondents were neutral on the issue of forming study groups (3.2, item 14) and only slightly positive with identifying their own study style (3.6, item 13).

The respondents agreed that attending laboratory (4.2, item 19), tutorial (4.1, item 17) and lecture (3.9, item 15) sessions was essential for success and that recording the attendance at all sessions was a significant factor in encouraging attendance (laboratories 3.9, item 20; lectures 3.8, item 18 and tutorials 3.7, item16).

All 7 statements regarding tutorial sessions had a high level of satisfaction amongst the respondents (range 4.3 – 4.1 on Likert scale). Students agreed that attending tutorials improved their understanding of modular content (4.3, item 22); the continuous assessment conducted in the tutorial sessions made them study more regularly (4.3, item 23) and helped them increase their skills in answering multiple choice questions (4.3, item 25). They also liked the small class size (25 students) in tutorials (4.2, item 21) and felt that the feedback in tutorials helped them identify gaps in their knowledge (4.2, item 27). The students also agreed that the tutorial sessions helped them identify the most important lecture content (4.1, item 26) and helped improve their test taking techniques (4.1, item 24).

DISCUSSION

In this study, a significant improvement in students' performance in the modular examinations at the end of semester one in the fourth year was compared to the previous three years. The students viewed the interventions as positive experiences in the transitional stage of learning from second to third level education. These results supported the authors' assumptions that a combined approach of delivering an intensive study skills course, recording attendance, increased small group teaching and regular continuous assessment can positively influence students' learning experience. This has several implications for pedagogical improvement in undergraduate education at universities where interventions are required early.

The internationalization of higher education and the various cultural orientation and prior learning experiences of first year students mean that students can face multiple challenges on entry to third level education[3]. Insufficient or under-developed study skills can impact negatively on the students' experience and the learning outcomes[11]. This study reveals that the study skills course helped students with their organization, preparation and management of learning, lectures and time, see figure 2. This is similar to the findings of Coughlan et al who link effective study skills training with students' academic development during the university transition phase of education[12]. This is also similar to the findings of Pittaway et al who advocated establishing positive patterns of learning and supporting learning communities through effective study skills[13].

Note taking enhances the short-term and long-term recall of lecture content[14]. Isaacs found that academic staff believed that taking lecture notes is a beneficial learning process for the students[15]. However, students do not share the same view as the academics of the efficacy of

note taking, see figure 2. This might be due to disappointment experienced in the transition period where students' expectations of a new and exciting study experience are denigrated by a return to study skills[16]. This has important pedagogical implications in that it alerts university lecturers against 'overdoing' study skills and taking the students' attention away from their main focus of study. One way to solve this problem might be through integrating the study skills with the gradual introduction of the sciences. It seems that RCSI study skills course has integrated the materials from the core modules in the FY which allowed the student to maintain interest and to address Hopkins's concerns[16].

The findings in figure 2 suggest that students viewed attending tutorials and participating in small-group teaching is beneficial to the learning process. This approach has been referred to as the 'collaborative model'. Integrated tutorial systems might offer greater coherence to what students are learning and that increased interaction with faculty and peers offered in such tutorials correlates positively with students' performance in core modules[17].

Braxton et al argue that in order to achieve better results, educational establishments ought to (1) encourage faculty and student contact, (2) advise through a systematic approach, (3) offer feedback on students' performance, (4) learn about students, (5) foster tolerance in the classroom and demonstrate a concern for improving college teaching[18]. The findings from our research substantiate these claims and demonstrate that encouraging more student and faculty contact through integrated tutorial systems can assist students in achieving academic success. They also demonstrate that introducing small group teaching can have important pedagogical implications for universities characterized by lecture-based teaching methods.

Another similar study showed that continuous monitoring of students through regular assessment may have important pedagogical implications[19]. In a broader context of undergraduate education, studies propose that a shift from traditional summative evaluation systems that have characterized universities for years, to formative forms of evaluation might now be a more beneficial approach to students' assessment[20]. A study, similar to ours, showed that prompt feedback is one of the most important principles of good classroom practice[21].

Finally, we found neutral responses for items related to the benefits of study groups and the contribution of the course to an increased understanding of students' own learning. In a study, the authors assumed that teaching the students how to form an effective study group would be helpful[22]. Bhattacharyya believed that what might be suitable in Western contexts might not necessarily work for non-Western students[23]. This necessitates a discussion of socio-cultural influences before any curriculum intervention is planned and suggests a need for undergraduate pedagogy sensitive to learners' previous school experience.

One of the limitations of this study is the lack of research into the socio-cultural background of students, which might be necessary to address the challenges of designing university programs interventions. Future work, therefore, should focus on conceptualizing the 'gap' between school and university in study skills and socio-cultural factors. This research did not consider the impact of language proficiency on students' opportunity to learn. Nevertheless, the need for studies that encompass language influences on students' literacy in science is quite clear[24].

CONCLUSION

Making minor adaptations to the core curriculum might be a sign of good academic practice. Encouraging contact between students and faculty through a small-group tutorial, teaching them study skills and self-efficacy strategies through active learning techniques and giving prompt feedback on students' performance have been found to facilitate the learning experience of undergraduates at RCSI Bahrain.

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